

BULLETIN

OF THE

ESSEX INSTITUTE.

VOL. 3.

SALEM, MASS., JULY, 1871.

No. 7.

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FIELD MEETING AT NORTH BEVERLY, JUNE 10th, 1871.

[Continued.]

TORNADO, OR CYCLONE, AT WENHAM.

MR. DODGE said, that since the appointment of the meeting, there had occurred in this immediate neighborhood, an event so rare in New England and of a character so fearful and destructive, he would make it the subject of his remarks. He alluded to the tornado or cyclone of the Sunday previous, which passed within a mile of his own residence, and the effects of which he had himself witnessed. The first we heard of it in this vicinity was just before five o'clock P. M., at or near Swan's crossing in Danvers, where it was seen by two men as they were riding by, to whom it had the appearance of a column of vapor and dust rushing past in a north easterly direction, but doing no damage. It was next seen by Daniel H. Johnson, the Superintendent of the Salem Water Works, whose duties called him that day to Wenham Lake. From him is the following graphic description.

“It was my good fortune last Sunday afternoon at a few

minutes past five to be at the ice houses, near the northern side of the lake, and see the cyclone come towards me across the lake, pass by within two hundred feet, in its course of destruction through Wenham, Hamilton and Essex.

My party were awaiting a shower to pass over, and were standing in a sheltered spot admiring the beauties of the thick heavy black clouds, passing over our heads in an easterly direction while a lower stratum of air near the earth was moving in a north easterly direction as indicated by a vane on the ice houses. The clouds kept shutting in closer, it was growing darker and darker, the wind blowing a gale, when across the lake comes a water-spout, as I supposed, in the shape of a tin tunnel such as is used in filling bottles, the broad mouth being thousands of feet in diameter away up in the clouds, the small end but fifty to one hundred feet in diameter touching the water.

The water-spout in its passage across the lake was taking up water all the while; the wind increased in violence bringing a wave nearly three feet high along with it, which washed well up on to the road near where we were standing. A large dory anchored a short distance from us was lifted into the air, twisted around like a top and fell bottom upwards into the lake. We ran so as to be as near as possible, and were but two hundred feet distant, when it struck a gravel-bank and orchard just to the west of the highway which offered considerable resistance, when up go the gravel, large stones, rail fences, hundreds of feet into the air appearing like ribbons,—twisting trees right out of the ground by the roots, and branches fly in every direction. We watched it move on until in three or four minutes it was out of sight, when it strikes a plowed field—the tunnel being black with loam from the earth away into the clouds—

then strikes a barn while the timbers and boards fly in every direction.

Its course was a remarkably straight line a few points to the north of east. The whizzing noise of the cyclone was terrific, ten times louder than the hum of our cotton factory, and the whole scene was peculiarly grand, wild and fearful."

Mr. Dodge resumed his remarks :

Continuing its course over fields, hills and valleys, here and there uprooting trees, it struck upon the road that leads from Wenham Centre to the Neck, where it made sad havoc of an orchard belonging to Abraham Dodge, demolishing his barn, as also a barn of Simeon Dodge in which was a valuable horse that escaped harm as if by a miracle. Passing on with fearful speed, it was seen to uproot large trees and even to whirl them along in the air, to overturn stone wall removing portions of it to some distance. It next struck the house, barn and out-buildings on the farm occupied by Asa W. Trout, on the easterly spur of Brown's hill in Hamilton, and here it seems to have spent its fury. The roof was lifted from one side of the house and deposited in fragments on the ground and the windows were smashed in on the side most exposed. The barn was made a total wreck and the pieces strown in all directions, large oak timbers being carried to some distance. An orchard on the side of the hill consisting of a large number of stalwart trees that had defied the storms of nearly a century, were twisted up by the roots and their branches and leaves coated with dirt that had been caught up by the cyclone as it crossed a neighboring corn-field. Even a horse that was feeding near the barn, was taken up bodily and dropped in a field some ways off and has not got over the injuries caused by his involuntary jaunt in the air. Thence, the cyclone

took its course towards Chebacco pond, levelling some pine and other trees, till it reached Essex doing but slight damage there and so passed out to sea.

What is not a little remarkable, is the occurrence the same afternoon in the interior of the State of a similar or the same cyclone, of which the following account appears in the newspapers.

“A terrible tornado passed through the towns of Paxton, Holden and West Boylston, Sunday afternoon, demolishing every building in its track and tearing up trees by the roots. In the town of Paxton it demolished the barn of L. N. Parkhurst and blew off one gable of his dwelling house. From there it went in a northeasterly direction, and blew down the buildings of Mr. Bigelow, on the old town farm. Thence it went through the woods sweeping all before it and striking the house and barn of Lewis Martin, in Holden, entirely demolishing both. The village of Holden was next taken in its destructive march, and here five barns, three houses, and one carpenter shop were blown down. Three persons were injured, one, Charles Burrett seriously. A strip of heavy stone wall, some twenty rods in length, was completely blown over, and large trees were blown thirty rods, with upward of a ton of earth upon their roots. The tornado appeared to move at the rate of seven miles an hour and was not more than ten rods in width.”

Mr. Dodge then stated that in his opinion these cyclones were one and the same, that at the interior being the beginning of that which ended at Essex, and for this opinion he gave the following reasons.

1st. The direction in which they passed was the same. By drawing a straight line on the large map of the State published by the Legislature a few years since, through Paxton, Holden and West Boylston, it would

also pass in a north easterly course through Swan's crossing over Wenham Lake, to Brown's hill and that part of Essex where the cyclone was last seen.

2d. The time of the occurrence of the cyclones was the same, allowing for the time it would take in its travelling between the two termini, at the rate of seven miles an hour, as it was estimated to have travelled, beginning at four and one half o'clock P. M. and finishing at a little past five o'clock of the same day.

3d. The width of the track — or in other words, the diameter of the cyclone — was the same in both cases from one hundred and fifty to one hundred and sixty feet; wherever there was any means of measuring the track, it varied but little from this width.

4th. As cyclones are of so rare occurrence in New England, it is more probable that this occurring not only on the same day but at nearly the same hour, moving in the same direction at the same rate of speed and of the same width, should be one and the same rather than that there should be two cyclones, separate and distinct in their origin and yet each combining all these elements.

But it may be said that if this be so, why was not its pathway across the country as distinctly marked as it was at both ends? To this it may be replied that the face of the cyclone may have been more or less intensified by circumstances or causes unknown to us, or the tunnel-shaped volume of vapor or other matter of which it was composed, may have been so drawn up at intervals as to do no damage. But it would be presumptuous for him to attempt a satisfactory solution of the question proposed, when the books that treat of the subject of cyclones, tornadoes, whirlwinds and other similar phenomena, leave the reader quite in the dark upon many points of enquiry.

The lines of demarcation between them seem to be somewhat confused. But the following points seem pretty clearly established.

Tornadoes over the sea are accompanied often with one or more complete water-spouts and over the land with partial water-spouts or with columns of dust. There is a close similarity of these phenomena. Tornadoes frequently burst forth upon the land suddenly, perhaps first on the side of a mountain and moving forward along a straight or curved track, with dark clouds moving towards the sea, while a breeze may be blowing in an opposite direction. They show their terrific force by overturning, uprooting, breaking or twisting off trees; by demolishing buildings or lifting these and other heavy bodies into the air to scatter their parts around at great distances, or sometimes to set them down again nearly unharmed; by lifting other objects, such as the beasts, persons, and sometimes even large cannon, and transporting them to considerable distances, destroying crops and farm improvements of all kinds in their course. As a rule the energy of the wind and the havoc it produces are greatest near the circumference of the whirl, and places over which at any moment its centre is situated may experience for the time an almost total lull of wind, to be renewed however in all its violence as the posterior margin of the whirl reaches them. This whirling motion is universal, and shows that the phenomena are in all cases associated with, or dependent on some form of whirling wind. Abundant facts prove that very heavy objects can thus be elevated and suspended for a considerable time before they are allowed to fall, though we are as yet unable to understand exactly in what manner so great a lifting power is exerted on those objects.

Hurricanes prevail more particularly, and with the

greatest fury in the torrid zone, always however at some distance from the equator, which they never touch or cross. In the polar regions they are unknown, but they occur occasionally in the temperate zones. In 1831, Wm. C. Redfield published in the "American Journal of Science" the first of a remarkable series of papers upon the phenomena of storms, in which he clearly established the fact that storms are progressive whirlwinds of a large diameter, and, what is remarkable, as is now well ascertained, those in the southern hemisphere rotate in an opposite direction from those in the northern, the former turning in whirls with the hands of a watch placed face upwards, the latter in the contrary direction to the movement of the hands of the watch. Mr Redfield subsequently suggested, what is now an accomplished fact, that the telegraph was likely to prove a most valuable instrument in giving notice of the approach of storms and hurricanes, and that to the United States it would prove more specially valuable when extended to the West India Islands.

From the accumulation and induction of facts in the domain of nature, are often deduced with absolute certainty the great laws—laws uniform and fixed—that control and regulate every department of that vast domain. The humblest observer and worker in our own Essex Institute—may her shadow never be less!—helps to this discovery by patient waiting and knocking for a response from the great mystery within, not growing weary or discouraged because it cometh not in a day, in a year, or in a series of years, but recording well ascertained facts for those who may afterwards take his place and so keeping up the line of waiters and watchers till the darkness flee away, and the bright light of morning gild the horizon.

Mr. F. W. PUTNAM was the next speaker. After a few remarks on the Cyclone and the track it had left, he alluded to the dust storms and the importance of collecting dust from such storms, when they occur, for microscopical observations, as the dust often contains, in abundance, interesting diatoms, etc., brought from a distance and from unknown localities. He then spoke of

THE FISHES COLLECTED IN THE LAKE.

There were two species of pickerel, two of sun fish, the perch, three of the shiner family, a sucker, the eel, the little darter, the horned pout and the alewife. The last was very abundant at the outlet as the water commissioners had kept the dam closed for a day in order that the members of the Institute should see the descent of the fish on their way to the sea. He then explained why it was that the fish all went over the dam tail first, as the water in the rapid current would otherwise be forced under the gill covers and destroy the delicate gills, while at the same time suffocating the fish, as the structure of the gills is adapted for allowing the water to be taken in at the mouth passing over the gills and out under the gill cover. It is owing to this fact that a fish, when quiet in the water, always keeps its head up stream if there is the slightest current, and the whole structure of the fish, including shape, scales and fins, is perfectly adapted to this purpose.

The alewives, which were now on their way to the sea, were all adult fishes that had entered the lake about the middle of May and had deposited their spawn along the shore. They were now returning to their winter quarters in deep water off our coast (for he did not believe that they migrated far south, as was generally supposed), and would return to the lake each season for the same

purpose, until their work and short lives were done. Young alewives, transparent little fellows about an inch in length, and not long hatched, were noticed swimming in small schools along the edge of the lake. These were the young from the eggs laid by the very fish that were now so anxious to return to the sea, and these young would follow in three or four months, when they would be about four inches in length, and they would return to the place of their birth, as full grown fish, in their third year.

The alewives are very prolific, each female laying about one quarter million of eggs, and though, possibly, not over one tenth of these eggs results in the production of full grown fishes, yet this tenth would give an immense number of young fish developed in such a body of water as Wenham Lake—say twenty-five million young for every thousand adult females that enter the lake. There was a time when the alewives must have swarmed into the lake by the hundreds of thousands, but their free run to and from the sea has been cut off by the erection of dams, the using of water and the excessive fisheries, to such an extent that now but comparatively few enter the lake, though, thanks to the noble work of our State Commissioners of Fisheries, in connection with the commissioners of the other New England States, the alewife with its cousin the shad, and the brilliant trout and silvery salmon, are fast becoming plenty in our rivers and lakes, and if the work of the commissioners continues to receive the well earned support of the people, and every one helps to enforce the laws providing for the free passage of fish over all our dams and preventing excessive fishing at the time of spawning, we shall have no cause of complaint about the want of good fishes and good fishing. For it is now well demonstrated that fishes can be made

a regular and as sound a source of income as stock raising and farming, and fish farming, as it has been called, now takes its place among the regular resources of our country and state.

MR. JAMES H. EMERTON exhibited several specimens of native plants collected during the forenoon and made some remarks in relation to the same.

Dr. HENRY WHEATLAND alluded briefly to some historical associations connected with this parish of Beverly, which was organized in 1714, and was for some years known as the "*Precinct of Salem and Beverly.*" The first minister,

REV. JOHN CHIPMAN,

son of Deacon Samuel Chipman of Barnstable, born Feb. 16, 1690-1, a graduate of Harvard College in the class of 1711, ordained over this parish, Dec. 28, 1715, and after a pastorate of nearly sixty years, the longest in Beverly, was gathered to his fathers, on the 23d of March, 1775, at the advanced age of eighty-five years. During this long period, nothing transpired to disturb the harmony that prevailed; he was faithful in the discharge of every duty incumbent upon his ministerial office; and was the honored and beloved pastor, who, on each returning sabbath, gave words of counsel, sympathy and wisdom to his people, who were wont to assemble within these venerable walls; uninterrupted prosperity followed, the church enlarged her borders, and the society flourished in all its interests.

A correspondent in the "Essex Gazette" says:—

"Beverly, March 29, 1775.

On Thursday last died, the Rev. John Chipman, in the 85th Year of his Age; and Yesterday was decently in-

tered. He was born at Barnstable, educated at Harvard College, and settled in the North Parish in this Town, Dec. 28, 1715, being their first Minister. It pleased the Father of Spirits to indue him with superior natural Powers, which he greatly improved, by a close Application to his studies, and making Divinity his principal Study. He was well qualified for the important Work to which he was called; and was a great Blessing in his Station. He had many Children; whom he educated and governed with great Wisdom and Prudence. His Family has been called a School of useful Knowledge and Virtue. And as he knew how to govern his own House, so he did also know how to take Care of the Church of God. The People of his Charge had happy Experience of his Ability in this Respect, while he presided over them; particularly when (some years past), this Country swarmed with itinerant Preachers and ignorant Exhorters, who threw these Churches in general into great Disorder and Confusion, propagated pernicious Errors, excited wild Enthusiasm, and promoted unchristian Divisions and Separations; by the Blessing of God on Mr. Chipman's wise Conduct, Peace and Order were preserved in his Parish, and solid, rational Religion flourished. As he was well furnished for the great Work of the Ministry, with Respect to the natural Powers of his Mind, his Knowledge and Learning, and Wisdom and Prudence, so he was also with Respect to Piety and serious Godliness. It pleased God, in his younger Years, to impress his Mind with a lively Sense of the important Things of Religion; and this he preserved through Life. By this he was excited to great Fidelity and Care in the Discharge of the Duties of his important Office. He watched for Souls, as knowing he must give Account, praying with and for his People with Fervency and Affection, and many Tears. It may perhaps be said, his Speech was contemptible, but this was said even of St. Paul, and yet he was not a whit behind the very chief of the Apostles, either for Abilities or Usefulness. His Preaching, in Imitation of that great Apostle's, was not with enticing Words of Man's Wisdom. He did not seek the Applause of Men, but the eternal

Welfare of immortal Souls: And he chose that Method of preaching which he thought would be most likely to answer this important End; and he was not deceived herein, for his preaching was attended with much Success. His People were highly favored of the Lord, in being directed to so able, faithful and successful a Minister, and in having him continued with them for such an unusual Length of Time; and it is hoped they remember it with Gratitude. He performed the Duties of his Office, with very little Intermission, almost 56 Years, when, being about 80 Years of Age, by the usual Infirmities of such an Age, and a distressing Asthma, he was taken off from his public Labours, and another Minister, the Rev. Mr. Hitchcock, settled as a Colleague with him; whom God preserve, and make a like Blessing to them. The four or five last Years of his Life he was almost entirely confined to his House, still honouring the Religion he professed and preached, by his Patience and cheerful Resignation to the Will of God under all his Sufferings. And when the Days that were assigned him here were finished, God gave him a very easy Passage into a better World. His Departure, it is said, seemed more like falling asleep than dying. May his numerous Offspring, and all that knew him, especially Ministers of the Gospel, follow the excellent Example he has left us. For blessed is that Servant whom his Lord, when he cometh, shall find so doing."

The house occupied by him on the road to the principal settlement in Beverly is still standing and is the residence of some of his descendants.

REV. ENOS HITCHCOCK.

The second minister was ordained as colleague in 1771 and the two pastors lived together in great mutual affection and harmony, the younger exerting himself for the interests of the people, spiritual and temporal, enjoying their esteem and acquiring the friendship of neighboring societies and ministers. Mr. Hitchcock was a native of Springfield, Mass., and a graduate of Harvard College in

1767. He warmly espoused the cause of his country, imbibing deeply the principles of the American Revolution, and, in 1777, entered the army as chaplain and continued until the close of the war. On the 1st of Oct., 1783, he was installed over the Benevolent Congregational Society in Providence, R. I., his connection with the church in Beverly having been amicably dissolved in 1780. Soon after he was elected into the Fellowship of Rhode Island College and for many years was one of its most enlightened and efficient directors. He was a good preacher, a learned divine, a man of active benevolence and deeply interested in the cause of popular education. He early turned his attention to the establishment of public schools for the instruction of the children of the poor, as well as those of the wealthy, visited these schools frequently and made such suggestions as tended to aid the efforts of the teachers and at the same time to awaken the energies of the pupils. He also addressed parents and others on the importance of education and published several books that were replete with useful information on this subject and highly esteemed. He died at Providence, Feb. 27, 1803, in the fifty-ninth year of his age.

REV. DANIEL OLIVER

the third minister, ordained Oct. 3, 1787; the pulpit, since the retirement of Mr. Hitchcock, having been temporarily supplied by several persons. Mr. Oliver was the son of Nathaniel and Mercy (Wendell) Oliver, and father of Gen. H. K. Oliver of Salem. He was born at Chelsea, April 4, 1753, and graduated at Dartmouth College in 1785. He dissolved his connection with this church in August, 1797, and was for several years engaged as a missionary to the Indians in the Genesee River country and in the Eastern parts of Maine. He died at Rox-

bury, Mass., Sept. 14, 1840, aged eighty-seven years. For two or three years after the dismissal of Mr. Oliver, the pulpit was again temporarily supplied by Messrs. Story, Alden, and Micah Stone, until the ordination of

REV. MOSES DOW

on the 18th of March, 1801, as the fourth minister. Mr. Dow was born in Atkinson, N. H., Feb. 4, 1771, and a graduate of Dartmouth College in the class of 1796. He retired from this pastoral office in April, 1813, with the highest testimonials of the council that granted his dismissal as "an able, faithful, discreet and devoted minister of Jesus Christ." He was afterwards installed at York, Me., Nov. 9, 1815, and resigned the position, Feb. 17, 1830. He died at Plaistow, N. H., in 1837, aged sixty-six.

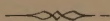
Rev. E. M. Stone, for many years a pastor of this church, the author of the history of Beverly and now the devoted and able minister at large in Providence, and others were mentioned.

Allusion was also made to Hugh Hill, the distinguished commander of one of the privateers from Beverly during the revolutionary war, whose country seat is within the limits of this parish, and where he resided from 1803 till his decease, which occurred Feb. 24, 1829. [See Hist. Coll. of Essex Institute, Vol. IV, page 181.]

Mr. HENRY WILSON of Beverly, mentioned some interesting facts respecting the church in which the meeting was held, the frame of which was the identical one erected one hundred and fifty-five years ago, although the exterior and interior have both been considerably modified, in adaptation to the present wants of the community. In

1837 the parish adopted resolutions to remodel the house, this was accomplished in about five months, and on the first day of February, 1838, it was reopened with appropriate services.

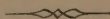
Remarks were also made by Messrs. Timothy Ropes, E. N. Walton, E. W. Harrington, C. Cooke, and others; and after passing a vote of thanks to the proprietors of the Church and of Mystic Hall, and to all others who had extended courtesies to the party, the meeting adjourned to Friday afternoon, at the Institute rooms.



ADJOURNED MEETING, FRIDAY, JUNE 20, 1871.

In Plummer Hall, at 4 P. M.

Daniel H. Johnson and Edwin C. Bolles both of Salem were elected resident members.



NOTICE.

ESSEX INSTITUTE HISTORICAL COLLECTIONS,

VOLUME XI. PART 1.

CONTENTS.

ADDRESS AT THE SEMI-CENTENNIAL ANNIVERSARY, by Abner C. Goodell, Jr.; SOME NOTES ON OLD MODES OF TRAVEL, by R. S. Rantoul; GLEANINGS FROM THE FILES OF THE COURT OF GENERAL SESSIONS OF THE PEACE, No. 1, communicated by James Kimball.

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DEFICIENCIES IN THE LIBRARY.

It is intended from time to time, to publish lists of deficiencies in the Library, hoping that the friends of the Institute, who may notice the same, will be induced to aid in completing the sets. Any number or volume, not designated (within brackets) under any title, will be acceptable.

DEFICIENCIES IN DIRECTORIES.

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- CAMDEN, N. J., by W. H. Boyd [1860].
 ELIZABETH, N. J., by A. Boyd [1868-9].
 ESSEX, HUDSON AND UNION COUNTIES, N. J., by W. H. Boyd [1859].
 HOBOKEN, N. J., by Gavit [1854-5]; by Gopsill [1831-2].
 HUDSON, N. J., by D. E. Gavit [1854-5]; by James Gopsill [1861-2].
 JERSEY CITY, N. J., by D. E. Gavit [1854-5]; by James Gopsill [1858-9]; by James Gopsill, [1861-2].
 PLAINFIELD, N. J., by A. Boyd [1868-9].
 RAHWAY, N. J., by A. Boyd [1868-9].
 NEWARK, N. J., by B. T. Pierson, [1835-6, 1836-7, 1837-8, 1838-9, 1839-40, 1840-1, 1841-2, 1842-3, 1843-4, 1844-5, 1845-6, 1846-7, 1847-8, 1848-9, 1849-50, 1850-1, 1851-2, 1852-3, 1853-4, 1854-5, 1855-6, 1856-7, 1857-8, 1858-9, 1859-60, 1860-1, 1861-2, 1862-3]; by C. H. Folwell [1863-4, 1864-5]; by James Gopsill [1835-6, 1867, 1868]; by A. S. Holbrook [1867-8, 1868-9]; Business Directory, by W. H. Boyd [1857-8, 1858-9].
 PATERSON, N. J., by W. H. Boyd [1857, 1859].
 TRENTON, N. J., by Clark, Moore & Raum [1854-5]; by W. H. Boyd [1857; 1859].
 ALLENTOWN, PENN., by W. H. Boyd [1860].
 ALLEGHANY, PENN., by Geo. H. Thurston [1868-9].
 EASTON, PENN., by W. H. Boyd [1860].
 ERIE, PENN., by J. H. Lant [1865-6].
 HARRISBURG, PENN., by W. Divine [1867-8]; by W. H. Boyd [1860].
 LANCASTER COUNTY, PENN., by W. H. Boyd [1859-60].
 LEBANON, PENN., by W. H. Boyd [1860].
 MEADVILLE, PENN., [1869-70].
 PHILADELPHIA, PENN., by James Robinson [1807]; by B. & T. Kite [1814]; by J. A. Paxton, [1819]; by Edward Whitely [1820]; by McCarty & Davis [1821]; by Robert Desilver [1824, 1828, 1835-6]; by A. McElroy [1837, 1839, 1840, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1854, 1855, 1856, 1857, 1858, 1859]; by S. E. Cohen [1860]; by McElroy [1860, 1861, 1862, 1864, 1865, 1866, 1867]; City and Business Directory, by James Gopsill [1868-9]; Business Directory by W. H. Boyd [1858].
 PITTSBURG, PENN., by G. H. Thurston [1868-9].
 POTTSVILLE, PENN., by W. H. Boyd [1860].
 READING, PENN., by W. H. Boyd [1860].
 WEST CHESTER, PENN., [1857-8].
 DELAWARE STATE, by W. H. and A. Boyd [1859-90].
 BALTIMORE, MD., by R. J. Matchett [1824, 1833, 1837-38]; by John Murphy, [1845]; by R. J. Matchett [1847-8, 1853-4]; by John W. Woods [1856-7] by W. H. Boyd [1858]; by John W. Woods [1864, 1865-6]; by Houston [1867].